


### **ABSTRACT**

An immunogenic detoxified protein is provided which comprises the amino acid sequence of subunit A of an E. coli heat labile toxin (LT-A) or a fragment thereof in  
5 which at least amino acid Ala-72 of the A subunits mutated, preferably by substitution with Arg. The toxoid is useful as vaccine against an enterotoxigenic strain of E. coli and is produced by recombinant DNA means by site-directed mutagenesis. It is also an effective adjuvant.

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<b>(21) International Application Number:</b> PCT/IB97/01440 <b>(22) International Filing Date:</b> 30 October 1997 (30.10.97)  <b>(30) Priority Data:</b> 9622660.0 31 October 1996 (31.10.96) GB  <b>(71) Applicant (for all designated States except US):</b> CHIRON S.P.A. [IT/IT]; Via Fiorentina, 1, I-53100 Siena (IT).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> PIZZA, Mariagrazia [IT/IT]; Via Fiorentina, 1, I-53100 Siena (IT). GIULIANI, Marzia, Monica [IT/IT]; Via Fiorentina, 1, I-53100 Siena (IT). RAPPUOLI, Rino [IT/IT]; Via Fiorentina, 1, I-53100 Siena (IT).  <b>(74) Agent:</b> HALLYBONE, Huw, George; Carpmaels & Ransford, 43 Bloomsbury Square, London WC1A 2RA (GB).		<b>(81) Designated States:</b> CA, JP, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>  
<b>(54) Title:</b> IMMUNOGENIC DETOXIFIED MUTANT E. COLI LT-A TOXIN  <b>(57) Abstract</b>  An immunogenic detoxified protein is provided which comprises the amino acid sequence of subunit A of an <i>E. coli</i> heat labile toxin (LT-A) or a fragment thereof in which at least amino acid Ala-72 of the A subunit is mutated, preferably by substitution with Arg. The toxoid is useful as vaccine against an enterotoxigenic strain of <i>E. coli</i> and is produced by recombinant DNA means by site-directed mutagenesis. It is also an effective adjuvant.		

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